EXAMINER'S AMENDMENT

1. Claim 23 is subject to examination. Claims 1-22 are cancelled.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Mr. William E. Lewis on March 14, 2008.

Amendments to the Claims

4. Please amend to the claim 23 as attached.

Amendments to the Specification

5. Please amend to the specification as following:

At page 2, line 15, please replace, "10/676,244 (attorney docket no. YOR920030250US 1)", with --10/676,244, now patent number 6,167,998,--

At page 8, line 10, please replace, "10/676,244 (attorney docket no. YOR920030250US 1)", with --10/676,244, now patent number 6,167,998,--

At page 14, line 27, please replace, "(attorney docket no. YOR920030250US 1)", with --, now patent number 6,167,998,--

Response to Amendment

6. The preliminary amendment dated 3/12/2008 is acknowledged

Allowable Subject Matter

7. Claim 23 is allowed.

Reasons for Allowance

8. M. Brodie et al., (e.g., "Optimizing probe selection for fault localization," Distributed Systems Operation and Management, 2001; "Intelligent Probing: A Cost-Efficient Approach to Fault Diagnosis in Computer Networks," IBM Systems Journal 41(3): 372-385; and U.S. patent application identified as Serial No. 10/676,244, now patent number 6,167,998, filed on September 30, 2003 and entitled "Problem Determination Using Probing.") proposed to use probing for diagnosis. However, the work focused mainly on pre-planned, fixed probe sets, which are scheduled to run periodically. Because the probe set is computed off-line, it needs to be able to diagnose all possible problems which might occur. However in practice, many of these problems may in fact never happen, and running the complete set of pre-planned probes might be quite wasteful. Another commonly used approach involves performing event correlation (see, e.g., S. Kliger et al., "A Coding Approach to Event Correlation," IM 1997; and B. Gruschke et al., "Integrated Event Management: Event Correlation Using Dependency Graphs," DSOM 1998) for identifying root-causes of problems. Problem determination is performed by analyzing alarms emitted by devices when a problematic situation occurs. However, in event correlation, unlike the probing scheme, events are "reactive" to a situation and require intensive instrumentation, which is only possible in a tightly managed environment. Moreover, event correlation uses a "passive" approach that

requires handling potentially huge volumes of events often unrelated to the problem of interest. Further, in contrast, the probing scheme uses test transactions that can be configured and executed without additional instrumentation of the existing system. There is also related work on performance measurement based on probing described in V. Paxson, "End-to-end Internet packet dynamics," Proceedings of SIGCOMM, pp. 139-152, 1997.

The claimed technique for diagnosing a problem associated with a computing system comprises the following steps/operations. One or more probes are executed in accordance with at least a portion of a previously selected probe schedule. When a result of one or more of the probes of the previously selected probe schedule indicates, at least, a potential problem associated with the computing system, one or more probes which optimize at least one criterion are selected in real-time. The one or more selected probes are executed so as to diagnose the potential problem. The step/operation of selecting in real-time one or more probes which optimize at least one criterion further comprise the step/operation of selecting in real-time one or more probes which maximize information gain relating to the potential problem. Further, the technique comprise the step/operation of analyzing results of the execution of the one or more selected probes using a probabilistic inference. The step/operation of analyzing results of the execution of the one or more selected probes using a probabitistic inference further comprise the step/operation of analyzing results of the execution of the one or more selected probes using a Bayesian network. The step/operation of analyzing results of the execution of the one or more selected probes using a probabilistic inference further comprise the step/operation of analyzing results of the execution of the one or more selected probes

using one or more prior fault probabilities for one or more system components. The technique further comprise the step/operation of repeating the step/operation of selecting in real-time one or more probes which optimize at least one criterion and the step/operation of analyzing results of the execution of the one or more selected probes until the a particular level of diagnostic confidence is reached. Still further, the technique comprise the step/operation of preselecting sets of probes that are executed. The step/operation of preselecting sets of probes that are executed further comprise the step of preselecting a problem detection probe set (DPS) and a problem localization probe set (LPS) that are executed, wherein probes of the DPS are intended to cover any problem and probes of the LPS are intended to localize a problem detected by a probe of the DPS. In another aspect of the invention, a technique for diagnosing a problem associated with a computing System comprises the following steps/operations. One or more probes which optimize at least one criterion are selected online, when a result of an execution of one or more probes of at least a portion of a previously selected probe schedule indicates, at least, a potential problem associated with the computing system. The one or more selected probes are executed so as to diagnose the potential problem. Hence, the combination of the limitations of the claim, the claim is allowed over the art of record.

Drawings

9. New corrected drawings are required in this application because the submitted figures contain handwritten changes. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings.

Information Disclosure Statement

10. An initialed and dated copy of the applicant's IDS form 1449, dated 5/3/04, is attached to the office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haresh Patel whose telephone number is (571) 272-3973. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:00 am to 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached at (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Haresh N. Patel/

Primary Examiner, Art Unit 2154

3/18/2008

Claim Amendments

Claim 23 (currently amended): A computer-implemented method for diagnosing a problem associated with a computing system, the method comprising the steps of:

executing one or more probes in accordance with at least a portion of a previously selected probe schedule for active probing;

when a result of one or more of the probes of the previously selected probe schedule indicates, at least, a potential problem associated with the computing system, selecting in real-time one or more probes which optimize at least one criterion, wherein the step of selecting in real-time one or more probes which optimize at least one criterion further comprises the step of selecting in real-time one or more probes which maximize information gain relating to the potential problem;

executing the one or more selected probes so as to diagnose the potential problem; analyzing results of the execution of the one or more selected probes using a probabilistic inference and using one or more prior fault probabilities for one or more system components;

wherein prior to the execution of the ~~sets of~~ probes, ~~to be executed are preselected such that~~ a problem detection probe set (DPS) and a problem localization probe set (LPS) ~~to be executed~~ are pre selected, wherein probes of the DPS are intended to cover any given problem and probes of the LPS are intended to localize a problem detected by a probe of the DPS; and

repeating the step of selecting in real-time one or more probes which optimize at least one criterion and the step of analyzing results of the execution of the one or more selected probes until a particular level of diagnostic confidence is reached.